

As a pure white growth of *D. Ajacis* L. was found in two states in New England during the summer of 1924, and since all available herbarium records, with the possible exception noted above, show traces, at least, of color, these specimens seem to represent a true form which is as well established locally in New England as the species itself. Both are escapes. I have named the form,—DELPHINIUM AJACIS L. forma **alba**, forma nova.

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BIDENS EATONI AND ITS VARIETIES.

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IT frequently happens that, on the mouths of rivers, the influence of the tide extends farther up the river than does the salt water. The plants growing on these river shores will, therefore, alternately be submerged by fresh water and exposed to the sun. The part of the river where this phenomenon occurs is called the estuary. *Bidens Eatoni* was described in 1903 from the estuary of the Merrimac River, and has been shown by subsequent investigation to be a strictly estuarine species, on the mouths of several rivers from the Hudson to the Kennebec. It is remarkable that on each estuary where this species appears it occurs in a slightly different phase, that is, it shows a great development of endemic varieties.

Bidens Eatoni is most closely related to *B. bidentoides*, *B. connata*, and *B. heterodoxa*, all of which are characterized by having striate achenes which are, at least at the base, upwardly barbed along the margins, and simple leaves which are often deeply 3-cleft. From the two latter species *B. Eatoni* and *B. bidentoides* differ in having less than 30, usually 8–25, flowers to each cylindrical to campanulate head, as opposed to 30–60 flowers in the heads of *B. connata* and *B. heterodoxa*. *B. bidentoides*, which has copiously pubescent achenes, plano-convex in cross-section, without conspicuous midribs, and with very slender awns (at least $\frac{1}{2}$ as long as the body of the achene), is at once distinguished from *B. Eatoni*, with its sparingly pubescent, flat to bi-convex achenes, with conspicuous midribs and stout awns.

Bidens Eatoni breaks up into varieties as follows:

- a.* Inner achenes 6.8–9 mm. long: awns 2, rarely 4 *b*
b. Heads narrowly cylindrical, at least when young *c*
c. Awns retrorsely barbed.....var. *typica*.
c. Awns antrorsely barbed.....var. *fallax*.
b. Heads broadly cylindrical to campanulate *d*
d. Inner bracts of the involucre striated with dull yellow to dark brown: lower leaves often 3-parted *e*
e. Awns 1.5–4 mm. long, retrorsely barbed.....var. *interstes*.
e. Awns 0.5–2 mm. long, barbed both retrorsely and antrorsely.....var. *mutabilis*.
d. Inner bracts of the involucre striated with lustrous amber to purple brown, lustrous black in age: leaves all simple.....var. *simulans*.
a. Inner achenes 9–11 mm. long: awns 4, rarely 2 *f*
f. Heads usually cylindrical: leaves with petioles 1–3 cm. long, the lower usually divided.....var. *kennebecensis*.
f. Heads subcylindrical to campanulate: leaves subsessile or with short broad-winged petioles, not divided.....var. *major*.

B. EATONI, var. **typica**. *B. Eatonii* Fernald, RHODORA v. 92. fig. 11–13 (1903). MASSACHUSETTS: estuary of the Merrimac River, at Newburyport, West Newbury, Salisbury, and Amesbury.

B. EATONI, var. **FALLAX** Fernald, l. c. fig. 14. Occasional with the typical form.

B. EATONI, var. **interstes** (Fassett), n. comb. *B. heterodoxa* (Fernald) Fernald & St. John, var. *interstes* Fassett, RHODORA xxvi. 178 (1924). Plants 1–8 dm. tall: leaves lanceolate to narrowly ovate, serrate, 0.5–1.5 dm. long, narrowed to a winged petiole, the lower often deeply cleft or 3-parted: heads campanulate, the terminal 8–10 mm. high, 8–12 mm. broad; outer bracts of the involucre 2–5, usually 3, lanceolate, acute, sometimes minutely toothed toward the apex; inner bracts striated with dull yellow to dark brown: achenes flat or with slightly keeled midribs, the outer 5.5–6.5 mm. long, the inner 6.5–8 mm. long, on the margins downwardly barbed except at the base where one or more barbs stick upward; awns 2, rarely 4, retrorsely barbed, 1.5–4 mm. long, the inner pair if present shorter.—MAINE: tidal shores at the mouth of Eastern River, Dresden, September 13, 1924, *N. C. Fassett*, no. 2122; tidal shores of the Kennebec River, Hatch's Corners, Dresden, September 9, 1924, *N. C. Fassett*, no. 2101; South Gardiner, September 16, 1924, *N. C. Fassett*, no. 2127; tidal shores of the Kennebec River, near the Maine Central R. R. ferry, Woolwich, September 18, 1924, *N. C. Fassett*, no. 2125; rocky places, tidal shores of the Kennebec River, Gardiner, September 18, 1923, *N. C. Fassett*, no. 852 (TYPE in Gray Herb.); tidal shores, Sheepscot River, Alna, September 12, 1924, *N. C. Fassett*, no. 2120.

The small number of flowers in the heads of this plant shows it to belong not with *B. heterodoxa*, but with *B. Eatonii*. The achenes are similar to those of var. *typica*, but a little broader in proportion to their length, while the heads are campanulate instead of cylindrical.

B. EATONI, var. **mutabilis**, n. var., var. *interstitem* habitu foliisque

simulans; achaeniis exterioribus 5.5–6 mm. longis, interioribus 7–7.5 mm. longis; aristis 2, 0.5–2 mm. longis, retrorse antrorseque setosis.

Resembling var. *interstes* in habit and foliage: outer achenes 5.5–6 mm. long, inner 7–7.5 mm. long; awns 2, 0.5–2 mm. long, with barbs both retrorse and antrorse on the same awn, as well as along the margins of the achenes.—Estuary of the Kennebec River.—MAINE: tidal shores of the Kennebec River, Cedar Grove, Dresden, September 9, 1924, *N. C. Fassett*, no. 2116 (TYPE in Gray Herb.); tidal shores of the Kennebec River, Dresden, September 16, 1924, *N. C. Fassett*, no. 2123.

B. EATONI, var. **simulans**, n. var., var. *interstitem* habitu achae-niisque simulans; foliis lanceolatis simplicibus; striis bractearum interiorum nitentibus sucino vel purpureo-fusco, aevo nigrescentibus nitentibus.

Resembling var. *interstes* in habit and fruit: leaves lanceolate, not divided: inner involucre bracts striate with lustrous amber to purple-brown, which turns lustrous black in age.—Estuary of the Connecticut River.—CONNECTICUT: hidden among tall grasses and sedges in brackish marsh, Old Lyme, September 9, 1917, *R. W. Woodward*; brackish marsh, Old Lyme, October 1, 1915, *R. W. Woodward* (TYPE in Gray Herb.); brackish marsh, Old Lyme, September 29, 1915, *R. W. Woodward*; sandy shore just above high water, Old Lyme, September 29, 1917, *R. W. Woodward*; tidal shores of the Connecticut River, Essex, October 13, 1924, *N. C. Fassett*, no. 2298; tidal shores of the Connecticut River, East Haddam, October 12, 1924, *N. C. Fassett*, no. 2299.

B. EATONI, var. **KENNEBECENSIS** Fernald, RHODORA xix. 76 (1917). Estuarine system at the mouth of the Kennebec River, Maine. In it long achenes and narrowly cylindrical heads this variety is quite distinct from var. *interstes* and var. *mutabilis* of the same region.

B. EATONI, var. **major**, n. var., planta 4–15 dm. alta, caulibus saepe prostratis nudisque infra; foliis lanceolatis 0.5–1.5 dm. longis simplicibus grosse serratis, petiolis brevibus alatis vel foliis angustatis ad basem subsessilem; capitulis subcylindratis vel campanulatis, terminalibus 1.3 cm. altis 18–30(–33)-floribus; bracteis exterioribus fere 3 linearibus acutis 1–2 cm. longis 2–3 mm. latis; achaeniis exterioribus 6–7.5 mm. longis aristis 3–4; achaeniis interioribus (8–)9–11 mm. longis costis saepe crassis ad apicem, aristis fere 4 retrorse setosis.

Plants 4–15 dm. tall, stems often reclining and naked below: leaves lanceolate, 0.5–1.5 dm. long, coarsely serrate but not divided, with short winged petioles, or narrowed to a sessile base: heads subcylindric to campanulate, the terminal 1.3 dm. high, 18–30(–33)-flowered: outer involucre bracts usually 3, 1–2 cm. long, 2–3 mm. broad, linear, acute: outer achenes 6–7.5 mm. long, awns 3–4 in number; inner achenes (8–)9–11 mm. long with midribs often somewhat thickened at the summit, awns usually 4, retrorsely barbed.—CONNECTICUT: tidal shores of the Quinnipiac River, North Haven,

October 14, 1924, *N. C. Fassett*, no. 2301 (TYPE in Gray Herb.); tidal shores of the Quinnipiac River, North Haven, *N. C. Fassett*, no. 2302 (has 33 flowers in the largest heads, and somewhat resembles *B. laevis*). NEW YORK: shores of the Hudson River, near the upper limit of tide, Hudson, September 30, 1923, *H. K. Svenson*.

This plant as it grows on the estuary of the Quinnipiac River has prostrate bases which strongly suggest those of *B. laevis*. The Hudson River specimen lacks this characteristic, but is otherwise essentially like the Connecticut material. A single plant collected in Massachusetts, on tidal shores of the Merrimac River, Amesbury, October 16, 1924, *N. C. Fassett*, no. 2300, may belong with this variety, but may be var. *kennebecensis*. It was collected late in the season and is in such poor condition that it is difficult to determine its affinities.

The estuary of the Taunton River, in southeastern Massachusetts, extends from Wier Village to the northern part of the town of Berkeley, and up the Three Mile River to North Dighton. On these shores grow *Bidens connata*, *B. comosa*, *B. cernua*, and a fourth *Bidens* which seems most closely allied to *B. Eatoni*. It is much branched, with many small leaves and short cylindrical heads. The achenes are somewhat flattened as in *B. Eatoni*, or angled and with keeled midribs as in *B. connata*, or trigonous. With the collections now available it is impossible to determine its exact status, but it seems at present best treated as a hybrid of *B. Eatoni* and *B. connata*. Botanists should keep this region in mind; collections made in late summer would probably throw more light on the affinities of this plant.

BIDENS multiceps, n. hyb. = *B. connata* × *Eatoni* (?), planta 2–6 dm. alta ramosissima super basem simplicem; foliis lanceolatis simplicibus 2–4 cm. longis integris vel cum dentibus utrinque 1–2 instructis; petiolis brevibus; capitulis multis late cylindratis, terminalibus 4–7 mm. altis 15–18-floris; bracteis exterioribus 1–1.5 cm. longis integris latioribus ad apicem obtusum; achaeniis exterioribus 4–7 mm. longis, planis, 2–4 aristis retrorso-barbatis; achaeniis interioribus 7–8 mm. longis, planis vel trigonis vel saepe in costis alatis, aristis 2–4 retrorso-barbatis.

Plants 2–6 dm. tall, much branched above the simple base: leaves lanceolate, short-petioled, 2–4 cm. long, entire or with 1–2 pairs of teeth: heads numerous, broadly cylindrical, the terminal 4–7 mm. tall, 15–18-flowered; outer involucre bracts 1–1.5 cm. long, entire, broader toward the obtuse apex: outer achenes 4–7 mm. long, flat, with 2–4 retrorsely barbed awns; inner achenes 7–8 mm. long, flat, trigonous, or often with keeled midribs, awns 2–4, retrorsely barbed.—Estuary

of the Taunton River.—MASSACHUSETTS: tidal shores of the Taunton River, Dighton, October 21, 1923, *Johnston & Fassett*, no. 905; tidal shores of the Taunton River, Berkeley, October 21, 1923, *Johnston & Fassett*, no. 903; tidal shores of the Three Mile River, Dighton, October 21, 1923, *Johnston & Fassett*, no. 906 (TYPE in Gray Herb.).

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THE AMPHIBIOUS GROUP OF POLYGONUM, SUBGENUS PERSICARIA.

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(Continued from p. 129.)

As the next advance in the study of these plants Gray¹ proposed *Polygonum Hartwrightii*, differentiating it chiefly by the spreading foliaceous rim of the ocrea, with the comments:

“Fruit unknown. I collected this almost 40 years ago at the head of Cayuga Lake [N. Y.] along with the remarkable *P. amphibium* var. *Muhlenbergii* of Meisner, which is widely distributed in North America. I saw it several years ago . . . in a high bog near the southern borders of Herkimer County, but not in flower. I have also a well developed specimen from the State collection in Michigan. Not regarding the stipules, it had been taken for one of the various puzzling varieties of *P. amphibium*, or, where the stipules were noticed, for an undeveloped condition of *P. Careyi*. But my attention having been called to it by Dr. S. Hart Wright, of Penn Yan, who finds it in open bottom land, among Carices, at Dundee, Yates County, New York, I am desirous that it should bear his name, as the real discoverer of its specific characters.”

Watson² took up the varietal name of Meisner for *P. coccineum*, and published *P. Muhlenbergii*:

“New England to Texas and westward to Washington Territory and northern California . . . including most of the var. *terrestre* of American botanists. Our subterrestrial form of *P. amphibium* seems rarely if ever to correspond to the var. *terrestre* of Europe.”

The same writer, in including *P. Hartwrightii* in his Botany of California, remarked that it “Varies greatly . . . approaching *P. amphibium* too closely.”

Britton³ revived for the same plant the varietal designation of

¹ Gray, Proc. Am. Acad. viii. 294 (1870).

² Watson, Proc. Am. Acad. xiv. 295 (1879).

³ Britton, Trans. N. Y. Acad. Sci. viii. 73 (1889).